Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A controller for [[a]] an SMA actuator, the SMA actuator including at least one SMA element, the controller including:

an electrical power source for applying an electrical current through the SMA element;

a sensor to detect change in an electrical resistance of the SMA element; and

a regulator for controlling a magnitude of the applied electrical current, said regulator applying a first current above a safe limit current for the SMA element until a selected change in said electrical resistance is detected and applying a second current less than said first current after said change is detected.

Claim 2 (original): A controller as claimed in claim 1, wherein said selected change corresponds to a range of temperatures for the SMA element at and below which thermal damage of the SMA element will not occur.

Claim 3 (previously presented): A controller as claimed in claim 1, wherein the selected change includes a safety factor or margin.

Claim 4 (original): A controller as claimed in claim 3, wherein the safety factor or margin allows for strain induced variation in the resistance of the SMA element.

Claim 5 (previously presented): A controller as claimed in claim 1, wherein the controller progressively reduces the first current applied through the SMA element as a function of the detected electrical resistance.

Claim 6 (original): A controller as claimed in claim 5, wherein the controller substantially smoothly reduces the first current applied through the SMA element as a function of the detected electrical resistance.

Claim 7 (previously presented): A controller as claimed in claim 5, wherein the reduction of the first current occurs over a range of electrical resistances within, but adjacent to the boundary of, the selected change.

Claim 8 (previously presented): A controller as claimed in claim 1, wherein the current applied through the SMA element is a substantially steady DC current.

Claim 9 (previously presented): A controller as claimed in claim 1, wherein the current applied through the SMA element is an intermittent DC current.

Claim 10 (previously presented): A controller as claimed in claim 1, wherein the current applied through the SMA element is an AC current.

Claim 11 (previously presented): A controller as claimed in claim 1, wherein the change in the electrical resistance of the SMA element is detected by measuring the electrical resistance of the SMA element.

Claim 12 (previously presented): A controller as claimed in claim 1, wherein the change in the electrical resistance of the SMA element is detected by measuring the electrical impedance or other characteristic indicative of the electrical resistance of the SMA element.

Claim 13 (previously presented): A controller as claimed in claim 1, wherein the electrical resistance of the SMA element is detected substantially continuously.

Claim 14 (previously presented): A controller as claimed in claim 1, wherein the electrical resistance of the SMA element is detected substantially at selected intervals.

Claim 15 (previously presented): A controller as claimed in claim 1, wherein the SMA element is a substantially straight wire.

Claim 16 (previously presented): A controller as claimed in claim 1, wherein the SMA element is a substantially helically wound wire.

Claim 17 (previously presented): A controller as claimed in claim 15, wherein the SMA actuator includes two or more SMA elements working in parallel.

Claim 18 (currently amended): A controller as claimed in claim 1, wherein the controller has an ~~initialisation~~ initialization or calibration mode in addition to a normal operating mode, the ~~initialisation~~ initialization or calibration mode measuring and recording the hot and/or cold electrical resistances of the SMA element.

Claim 19 (currently amended): A controller as claimed in claim 18, wherein the controller enters the ~~initialisation~~ initialization or calibration mode automatically upon the SMA actuator being powered up.

Claim 20 (currently amended): A controller as claimed in claim [[19]] 18, wherein the controller enters the ~~initialisation~~ initialization or calibration mode automatically upon ~~the SMA actuator being powered up~~ command.

Claim 21 (currently amended): A controller as claimed in claim 19, wherein the ~~initialisation~~ initialization or calibration operation includes applying at least one test current through the SMA element, measuring the electrical resistance to the test current, and determining the selected change from the measured resistance.

Claim 22 (previously presented): A controller as claimed in claim 1, including a motion control system for computing the desired degree of actuation of the actuator as a function of the discrepancy between a desired motion or position of an output element of the SMA actuator and a detected actual motion or position of the output element.

Claim 23 (previously presented): A controller as claimed in claim 1, wherein a gain of the motion control system is set high so that a small position error will result in a correctional signal that exceeds the safe limit current of the SMA element.

Claim 24 (previously presented): A controller as claimed in claim 1, wherein the current regulator is able to apply a third current to maintain the SMA element in an austenite phase, the third current being significantly less than the safe limit current.

Claim 25 (previously presented): A controller as claimed in claim 1, wherein, if the measured resistance of the SMA element exceeds a selected upper operating limit or falls

below a selected lower operating limit, the controller issues a malfunction or error signal indicating that the actuator is not functioning correctly.

Claim 26 (currently amended): [[A]] An SMA actuator including:

at least a first SMA element;

an output element operably associated with the SMA element, the output element moving in response to the actuation of the SMA element; and

a controller as claimed in claim 1 for controlling the actuation of the SMA element.

Claim 27 (currently amended): [[A]] An SMA actuator as claimed in claim 26, including a second SMA element, said SMA elements being operably arranged so that the contraction of one of the SMA elements complementarily exerts a stretching force on the other of the SMA elements.

Claim 28 (original): A method of heating at least one SMA element of an SMA actuator, the method including:

applying an electrical current through the SMA element; and

detecting change in the electrical resistance of the SMA element; wherein

a first current above a safe limit current for the SMA element is applied until a selected change in said electrical resistance is detected and a second current less than said first current is applied after said change is detected.

Claim 29 (currently amended): A method [[a]] as claimed in claim 28, wherein said selected change corresponds to a range of temperatures for the SMA element at and below which thermal damage of the SMA element will not occur.

Claim 30 (previously presented): A method as claimed in claim 28, wherein the selected change includes a safety factor or margin.

Claim 31 (original): A method as claimed in claim 30, wherein the safety factor or margin allows for strain induced variation in the resistance of the SMA element.

Claim 32 (previously presented): A method as claimed in claim 28, including progressively reducing the first current applied through the SMA element as a function of the detected electrical resistance.

Claim 33 (original): A method as claimed in claim 32, including substantially smoothly reducing the first current applied through the SMA element as a function of the detected electrical resistance.

Claim 34 (previously presented): A method as claimed in claim 32, wherein the reduction of the first current occurs over a range of electrical resistances within, but adjacent to the boundary of, the selected change.

Claim 35 (previously presented): A method as claimed in claim 28, wherein the current applied through the SMA element is a substantially steady DC current.

Claim 36 (previously presented): A method as claimed in claim 28, wherein the current applied through the SMA element is an intermittent DC current.

Claim 37 (previously presented): A method as claimed in claim 28, wherein the current applied through the SMA element is an AC current.

Claim 38 (previously presented): A method as claimed in claim 28, including detecting the change in the electrical resistance of the SMA element by measuring the electrical resistance of the SMA element.

Claim 39 (previously presented): A method as claimed in claim 28, including detecting the change in the electrical resistance of the SMA element by measuring the electrical impedance or other characteristic indicative of the electrical resistance of the SMA element.

Claim 40 (previously presented): A method as claimed in claim 28, including detecting the electrical resistance of the SMA element substantially continuously.

Claim 41 (previously presented): A method as claimed in claim 28, including detecting the electrical resistance of the SMA element substantially at selected intervals.

Claim 42 (previously presented): A method as claimed in claim 28, wherein the SMA element is a substantially straight wire.

Claim 43 (previously presented): A method as claimed in claim 28, wherein the SMA element is a substantially helically wound wire.

Claim 44 (previously presented): A method as claimed in claim 42, wherein the SMA actuator includes two or more SMA elements working in parallel.

Claim 45 (currently amended): A method as claimed in claim 28, including measuring and recording the hot and/or cold electrical resistances of the SMA element as part of an ~~initialisation~~ initialization or calibration operation.

Claim 46 (currently amended): A method as claimed in claim 45, wherein the ~~initialisation~~ initialization or calibration operation is performed automatically upon the SMA actuator being powered up.

Claim 47 (currently amended): A method as claimed in claim 45, wherein the ~~initialisation~~ initialization or calibration operation is performed automatically upon command.

Claim 48 (currently amended): A method as claimed in claim 45, including as part of the ~~initialisation~~ initialization or calibration operation applying at least one test current through the SMA element, measuring the electrical resistance to the test current, and determining the selected change from the measured resistance.

Claim 49 (previously presented): A method as claimed in claim 28, including computing the desired degree of actuation of the actuator as a function of the discrepancy between a desired motion or position of an output element of the SMA actuator and a detected actual motion or position of the output element.

Claim 50 (previously presented): A method as claimed in claim 28, including applying a third current to maintain the SMA element in an austenite phase, the third current being significantly less than the safe limit current.

Claim 51 (previously presented): A method as claimed in claim 28, including, if the measured resistance of the SMA element exceeds a selected upper operating limit or falls below a selected lower operating limit, issuing a malfunction or error signal indicating that the actuator is not functioning correctly.